



Baker 18-8

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Patent Application

Applicant(s): A.D. Baker et al.
Case: 18-8
Serial No.: 09/272,958
Filing Date: March 19, 1999
Group: 2667
Examiner: Kwang Bin Yao

I hereby certify that this paper is being deposited on this date with the U.S. Postal Service as first class mail addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Signature

Date: August 18, 2004

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Title: Symbol-Based Control of Terminal Endpoints
in a Communication System

SUPPLEMENTAL APPEAL BRIEF

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This Supplemental Appeal Brief is submitted in response to the Office Action dated May 18, 2004 in the above-referenced application, in which the Examiner reopened prosecution in response to the Appeal Brief filed November 3, 2003.

Applicants have submitted concurrently herewith a response to the Office Action, requesting reinstatement of the appeal.

REAL PARTY IN INTEREST

The present application is currently assigned to Avaya Inc. or a subsidiary thereof. Avaya Inc. is the real party in interest.

RELATED APPEALS AND INTERFERENCES

There are no known related appeals or interferences.

STATUS OF CLAIMS

The present application was filed on March 19, 1999 with claims 1-26. Claims 1, 12, 25 and 26 are the independent claims.

Claims 1, 2, 4, 12, 13, 15 and 23-26 stand rejected under 35 U.S.C. §102(b).

Claims 5, 7, 16 and 18 stand rejected under 35 U.S.C. §103(a).

Claims 3, 6, 8-11, 14, 17 and 19-22 have been indicated as containing allowable subject matter, and would be allowable if rewritten in independent form.

Claims 1, 2, 4, 5, 7, 12, 13, 15, 16, 18 and 23-26 are appealed.

STATUS OF AMENDMENTS

There have been no amendments filed subsequent to the appealed rejection.

SUMMARY OF INVENTION

The present invention is directed to methods and apparatus for controlling a terminal in a communication system. A command symbol is generated that is representative of a plurality of commands in accordance with a terminal protocol supported by a switch of the system. The command symbol is transmitted to a terminal having a valid command space which is less than a full command space of the terminal protocol. The terminal decodes the symbol and executes the corresponding plurality of commands, thereby conserving transmission bandwidth between the switch and the terminal, as well as providing other advantages.

An illustrative embodiment of the invention is shown in FIG. 1 of the drawings, and includes a communication system 100 having an enterprise switch 110. As noted in the specification at page 6, lines 3-19, the illustrative embodiment allows an existing wired terminal protocol, such as a protocol used to control a wired deskset terminal 126 in the system 100, to be extended in a bandwidth-efficient manner to support wireless terminals, such as a mobile wireless terminal 122 of the system 100. An example of a full command space of a terminal protocol used to control wired deskset terminal 126 is shown in FIG. 2 of the drawings, and described in the corresponding text at page 6, line 20 to page 7, line 6 of the specification. An example of a terminal with "a valid command space which is less than a full command space of the terminal protocol" is the wireless

terminal 122 shown in FIG. 3 of the drawings, which can be fully controlled using the reduced command space shown in FIG. 4 of the drawings.

The following portion of the specification at page 1, lines 11-23, with emphasis supplied, indicates that in conventional arrangements, use of a complex multi-octet terminal protocol to control a system terminal presents a number of significant problems:

Communication system switches frequently deploy multifunction voice or voice-and-data terminals which generally require a complex multi-octet terminal protocol to drive the terminal interface and to control transport services. Such a multi-octet protocol is typically field oriented, and may include, e.g., a header field, a command pointer field, a command data field interpreted according to the contents of the command pointer, and an integrity check field. Each field is usually defined as a collection of one or more bits, and certain bits or collections of bits are dedicated to certain functions. This creates fixed relationships between bits and command interpretations. In addition, the deskset terminal design is such that a large number of bits are assigned or reserved for numerous feature keys and feature indicator controls. When such a system is upgraded to support wireless terminals, use of the existing wired terminal protocol is desirable from a switch software point of view, since re-use of the protocol is generally a low-cost implementation. Unfortunately, this conventional approach requires excessive bandwidth, and fails to optimize the control protocol for the wireless voice terminal.

The present invention advantageously solves these problems of the prior art by providing the claimed symbol-based arrangements which allow a system terminal to operate using a valid command space which is less than a full command space of the terminal protocol.

These advantages in the illustrative embodiment are more particularly described as follows at page 3, lines 6-14, of the specification, with emphasis supplied:

The above-described illustrative embodiment of the invention significantly reduces the command field associated with supporting the operation of a wireless terminal using an

existing wired terminal protocol. This results in a proportional bandwidth consumption reduction when communicating over wireless communication channels, thereby preserving this scarce resource. The full functionality of the system, as expressed by the wired terminal protocol, is made available to the wireless terminal to the extent implementable in that terminal. In addition, there is no need to subject the command symbols to bitwise encryption, since their field mapping conventions in accordance with the wired terminal protocol are eliminated during the symbol generation process of the invention.

The present invention thus provides significant advantages over the prior art.

ISSUES PRESENTED FOR REVIEW

1. Whether claims 1, 2, 4, 12, 13, 15 and 23-26 are anticipated under 35 U.S.C. §102(b) by U.S. Patent No. 5,406,550 (hereinafter “McTiffin”).
2. Whether claims 5, 7, 16 and 18 are unpatentable under 35 U.S.C. §103(a) over McTiffin in view of U.S. Patent No. 4,397,030 (hereinafter “Becker”).

GROUPING OF CLAIMS

With regard to Issue 1, claims 1, 2, 4, 12, 13, 15 and 23-26 stand or fall together.

With regard to Issue 2, claims 5 and 16 stand or fall together, and claims 7 and 18 stand or fall together.

ARGUMENT

Issue 1

Applicants initially note that §2131 of the Manual of Patent Examining Procedure (MPEP), Eight Edition, August 2001, specifies that a given claim is anticipated “only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference,” citing Verdegaal Bros. v. Union Oil Co. of California, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Moreover, MPEP §2131 indicates that the cited reference must show the “identical invention . . . in as complete detail as is contained in the . . . claim,” citing Richardson

v. Suzuki Motor Co., 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). For the reasons identified below, Applicants submit that the Examiner has failed to establish anticipation of claims 1, 2, 4, 12, 13, 15 and 23-26 by the McTiffin reference.

Independent claim 1 is directed to a method of controlling a terminal in a communication system. The method includes the following steps, which are denoted as (a) and (b) herein for ease of discussion:

(a) generating a command symbol representative of a plurality of commands in accordance with a terminal protocol supported by a switch of the system; and

(b) transmitting the command symbol to a terminal having a valid command space which is less than a full command space of the terminal protocol, wherein the terminal decodes the symbol and executes the corresponding plurality of commands.

As noted above, the specification at page 1, lines 11-23, indicates that in conventional arrangements, use of a complex multi-octet terminal protocol to control a system terminal is problematic in that it requires excessive bandwidth, and fails to optimize the control protocol for terminals, such as wireless voice terminals, which cannot utilize the full command space of the terminal protocol.

The present invention as set forth in independent claim 1 solves these problems of the prior art by providing a symbol-based approach which allows a system terminal to operate using a valid command space which is less than a full command space of the terminal protocol. More specifically, in step (a) a command symbol is generated that is representative of a plurality of commands in accordance with a terminal protocol supported by a switch of the system, and in step (b), the command symbol is transmitted to a terminal having a valid command space which is less than a full command space of the terminal protocol. The terminal decodes the symbol and executes the corresponding plurality of commands, thereby conserving bandwidth and providing other advantages, as described in the specification at, for example, page 3, lines 6-14. The present invention as claimed thus provides significant advantages over the prior art. As will be described

below, the claimed arrangements, and their associated advantages, are not taught or suggested by the McTiffin reference.

The Examiner argues that each of claims 1, 2, 4, 12, 13, 15 and 23-26 is anticipated by the McTiffin reference. Applicants respectfully disagree.

With regard to independent claim 1, the Examiner asserts that the claimed arrangement is met by the teachings in FIGS. 1, 2 and 3 of McTiffin. Applicants believe that the Examiner is misinterpreting the McTiffin reference. Step (a) calls for generating a command symbol representative of a plurality of commands in accordance with a terminal protocol. Step (b) specifies that a terminal decodes the symbol and executes the corresponding plurality of commands. The Examiner at page 3, lines 2-3, of the Office Action argues that the CDMA code of McTiffin corresponds to the claimed command symbol, and that the Virtual Path Identifier (VPI) and Virtual Channel Identifier (VCI) of McTiffin correspond to the claimed plurality of commands that are represented by the command symbol. However, the VPI and VCI that are translated to a CDMA code for transmission over mobile radio system 1 of McTiffin are included in the output ATM cell stream that is delivered to mobile terminal 19. This is apparent from, for example, FIG. 2 and the associated text at column 2, line 59, to column 3, line 16, which provides as follows with emphasis supplied:

Referring now to FIG. 2, the communication system comprises a mobile radio system shown within a broken line 1, which comprises a transmitter 2 which is in communication with a plurality of mobile units and a receiver 3 which is in communication with a plurality of transmitters not shown. Cells from the ATM network are fed via a line 4 to a unit 5 which serves to remove the VPI and VCI data fields from the header. The information field and residual header of each cell are then fed via a line 6 to the radio transmitter equipment 2. The VPI and VCI field data is fed from the unit 5 via a line 7 to a translator 8 which serves to translate the VPI and VCI field data to corresponding CDMA code data which is fed via a line 9 to the transmitter equipment 2.

The remainder of each cell comprising the information field and the residual header, from which the VPI and VCI data has been removed, are transmitted to an address appropriate to a mobile as indicated by the VPI and VCI data.

Conversely, signals received within the mobile radio system at the receiving equipment 3 are translated in a second translator 10 to produce VPI and VCI codes corresponding to the CDMA code used in the system. This VPI and VCI data is then combined in a unit 11 with the remainder of the appropriate cell so that it can be retransmitted via a line 12 to the mobile terminal.

Thus, the mobile terminal 19 receives the full VPI and VCI data. Neither the mobile terminal 19 nor its associated interface apparatus 18 is operative to decode a symbol and to execute a corresponding plurality of commands represented by that symbol, as claimed. Instead, McTiffin simply teaches that VPI and VCI data from an ATM network 16 can be translated to a CDMA code for transmission through mobile radio system 1, with the CDMA code being retranslated back to VPI and VCI data for delivery to mobile terminal 19. Such an arrangement fails to meet the claim limitations, and fails to provide the associated advantages of the invention.

In summary, there are limitations in independent claim 1 that are clearly not taught or suggested by the McTiffin reference. The §102(b) rejection of claim 1 is therefore believed to be improper and should be withdrawn.

Independent claims 12, 25 and 26 include limitations similar to those of claim 1, and are believed allowable for substantially the same reasons that claim 1 is believed allowable.

Dependent claims 2, 4, 13, 15, 23 and 24 are believed allowable for at least the reasons identified above with regard to their respective independent claims.

Issue 2

The §103(a) rejection is traversed on the ground that the Becker reference fails to supplement the above-described deficiencies of McTiffin as applied to the independent claims. Dependent claims 5, 7, 16 and 18 are therefore believed allowable for at least the reasons identified above with regard to their respective independent claims.

In addition, the proposed combination of McTiffin and Becker fails to meet the specific limitations of the dependent claims.

With regard to dependent claims 5 and 16, each of these claims requires that a header portion of a field-based, fixed-length packet format comprises at least one of a primary switchhook indicator, a secondary switchhook indicator, an extended protocol indicator and a test indicator. The Examiner relies on the teachings in column 8, lines 28-69, of Becker. However, there is no disclosure in the relied-upon portion of Becker which meets the particular limitation in question. References to “switchhook” in that portion apparently refer to monitoring of a switchhook, such as the switchhook 25 of the terminal equipment in FIG. 5, and not to inclusion of a switchhook indicator in a header portion of a packet format as claimed. The collective teachings of McTiffin and Becker therefore fail to meet the limitations of claims 5 and 16.

With regard to dependent claims 7 and 18, each of these claims requires that a given command symbol specifies commands associated with at least a primary switchhook and a test indicator. Again, the Examiner relies on the teachings in column 8, lines 28-69, of Becker. However, there is no disclosure in the relied-upon portion of Becker which meets the particular limitation in question. The collective teachings of McTiffin and Becker therefore fail to meet the limitations of claims 7 and 18.

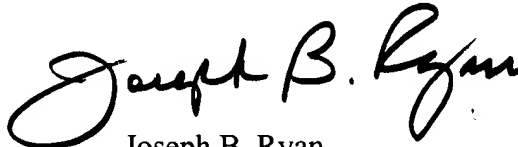
Furthermore, the Examiner has failed to identify a cogent motivation for the proposed combination of McTiffin and Becker. The Federal Circuit has stated that when patentability turns on the question of obviousness, the obviousness determination “must be based on objective evidence of record” and that “this precedent has been reinforced in myriad decisions, and cannot be dispensed with.” In re Sang-Su Lee, 277 F.3d 1338, 1343 (Fed. Cir. 2002). The Federal Circuit has further stated that “conclusory statements” by an examiner fail to adequately address the factual question of motivation, which is material to patentability and cannot be resolved “on subjective belief and unknown authority.” Id. at 1343-1344. Applicants submit that the Examiner has failed to provide any objective evidence of motivation to combine McTiffin and Becker, or to modify their teachings, to meet the claim limitations in question. The particular statement provided by the Examiner is on page 5 of the Office Action, and is as follows:

It would have been obvious to one of the ordinary skill in the art at the time of the invention to modify the system of McTiffin, by using the features, as taught by Becker et al., in order to provide the advantage of transmitting signaling information and data simultaneously at a low bit rate.

This is believed to be nothing more than a conclusory statement of obviousness, based on the type of "subjective belief and unknown authority" that the Federal Circuit has indicated is insufficient to support an obviousness rejection. The §103(a) rejection is therefore believed to be improper and should be withdrawn.

For at least the above reasons, Applicants respectfully submit that claims 1, 2, 4, 5, 7, 12, 13, 15, 16, 18 and 23-26 are in condition for allowance. Accordingly, withdrawal of the §102(b) and §103(a) rejections is respectfully requested.

Respectfully submitted,

A handwritten signature in black ink, reading "Joseph B. Ryan". The signature is fluid and cursive, with the first name "Joseph" and last name "Ryan" clearly legible.

Date: August 18, 2004

Joseph B. Ryan
Attorney for Applicant(s)
Reg. No. 37,922
Ryan, Mason & Lewis, LLP
90 Forest Avenue
Locust Valley, NY 11560
(516) 759-7517

APPENDIX

1. (Original) A method of controlling a terminal in a communication system, the method comprising the steps of:

generating a command symbol representative of a plurality of commands in accordance with a terminal protocol supported by a switch of the system; and

transmitting the command symbol to a terminal having a valid command space which is less than a full command space of the terminal protocol, wherein the terminal decodes the symbol and executes the corresponding plurality of commands.

2. (Original) The method of claim 1 wherein the terminal protocol is a wired terminal protocol, and the terminal is a wireless terminal.

3. (Original) The method of claim 2 further including the steps of:

resizing a command space associated with the wired terminal protocol to generate a reduced command space suitable for use with the wireless terminal;

generating a representation in which a first portion of the reduced command space is correlated with a second portion of the reduced command space; and

assigning command symbols to valid entries in the representation, such that a given one of the command symbols uniquely identifies a particular set of commands in the reduced command space.

4. (Original) The method of claim 2 wherein the wired terminal protocol utilizes a field-based fixed-length packet format including a header portion and a command portion.

5. (Original) The method of claim 4 wherein the header portion includes at least one of a primary switchhook indicator, a secondary switchhook indicator, an extended protocol indicator and a test indicator.

6. (Original) The method of claim 4 wherein the command portion includes a command pointer identifying a category of commands and at least one command data segment identifying a particular command in a given one of the categories of commands.

7. (Original) The method of claim 5 wherein a given one of the command symbols specifies commands associated with at least the primary switchhook and the test indicator.

8. (Original) The method of claim 6 wherein a given one of the command symbols specifies commands associated with at least a portion of the command pointer and the command data segment.

9. (Original) The method of claim 3 wherein the step of generating a representation includes forming a tabular representation in which specific values of bits in the first portion of the reduced command space correspond to columns, and in which specific values of bits in the second portion of the reduced command space correspond to rows.

10. (Original) The method of claim 9 wherein the bits in the first portion of the reduced command space include at least one bit for each of a primary switchhook, a test indicator, and a command pointer.

11. (Original) The method of claim 9 wherein the bits in the second portion of the reduced command space include a plurality of command data segment bits.

12. (Original) An apparatus for controlling a terminal in a communication system, comprising:

a memory, associated with a switch of the system, for storing a set of command symbols, wherein each of at least a subset of the command symbols is representative of a plurality of commands in accordance with a terminal protocol supported by the switch; and

a processor coupled to the memory and operative to direct the transmission of a particular one of the command symbols to a terminal having a valid command space which is less than a full command space of the terminal protocol, wherein the terminal decodes the symbol and executes the corresponding plurality of commands.

13. (Original) The apparatus of claim 12 wherein the terminal protocol is a wired terminal protocol, and the terminal is a wireless terminal.

14. (Original) The apparatus of claim 13 wherein the set of command symbols is generated by resizing a command space associated with the wired terminal protocol to generate a reduced

command space suitable for use with the wireless terminal, generating a representation in which a first portion of the reduced command space is correlated with a second portion of the reduced command space, and assigning command symbols to valid entries in the representation, such that a given one of the command symbols uniquely identifies a particular set of commands in the reduced command space.

15. (Original) The apparatus of claim 13 wherein the wired terminal protocol utilizes a field-based fixed-length packet format including a header portion and a command portion.

16. (Original) The apparatus of claim 15 wherein the header portion includes at least one of a primary switchhook indicator, a secondary switchhook indicator, an extended protocol indicator and a test indicator.

17. (Original) The apparatus of claim 15 wherein the command portion includes a command pointer identifying a category of commands and at least one command data segment identifying a particular command in a given one of the categories of commands.

18. (Original) The apparatus of claim 16 wherein a given one of the command symbols specifies commands associated with at least the primary switchhook and the test indicator.

19. (Original) The apparatus of claim 17 wherein a given one of the command symbols specifies commands associated with at least a portion of the command pointer and the command data segment.

20. (Original) The apparatus of claim 14 wherein the representation comprises a tabular representation in which specific values of bits in the first portion of the reduced command space correspond to columns, and in which specific values of bits in the second portion of the reduced command space corresponding to rows.

21. (Original) The apparatus of claim 20 wherein the bits in the first portion of the reduced command space include at least one bit for each of a primary switchhook, a test indicator, and a command pointer.

22. (Original) The apparatus of claim 20 wherein the bits in the second portion of the reduced command space include a plurality of command data segment bits.

23. (Original) The apparatus of claim 13 wherein the processor comprises a central processing unit of the switch.

24. (Original) The apparatus of claim 13 wherein at least one of the memory and the processor are associated with a port card in the switch of the system.

25. (Original) An apparatus comprising:

a system terminal operative to receive command symbols from a system switch, each of at least a subset of the command symbols being representative of a plurality of commands in accordance with a terminal protocol supported by the switch, wherein the terminal has a valid command space which is less than a full command space of the terminal protocol, and wherein the terminal decodes a given one of the symbols and executes the corresponding plurality of commands.

26. (Amended) An article of manufacture comprising:

a machine-readable storage medium storing one or more programs for implementing a method of controlling a terminal in a communication system, which when executed implement the steps of:

generating command symbols, each of at least a subset of the command symbols representative of a plurality of commands in accordance with a terminal protocol supported by a switch of the system; and

directing the terminal, via a given one of the symbols when transmitted to a terminal having a valid command space which is less than a full command space of the terminal protocol, to execute the corresponding plurality of commands.